

ORDINANCE NO. 2443

AN ORDINANCE AMENDING THE BROKEN ARROW CODE BY CREATING CHAPTER 25, ESTABLISHING A SYSTEM OF STORMWATER MANAGEMENT, CREATING A UTILITY RATE AND OTHER FEE STRUCTURES, IMPOSING GENERAL WATERSHED DEVELOPMENT REQUIREMENTS, IMPOSING FLOODPLAIN DEVELOPMENT REQUIREMENTS, PROVIDING FOR ADMINISTRATION, PROVIDING FOR ENFORCEMENT, REPEALING ALL ORDINANCES IN CONFLICT THEREWITH, PROVIDING FOR SEVERABILITY, AND DECLARING AN EMERGENCY.

CHAPTER 25

STORMWATER MANAGEMENT

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SECTION I. The Broken Arrow Code is hereby amended by creating Chapter 25, which reads as follows:

ARTICLE I. STORMWATER MANAGEMENT PROGRAM

Sec. 25-1. Findings of fact.

The City of Broken Arrow makes the following findings of fact:

- (a) Because of its physical terrain and geographical location, the City is particularly subject to damage from stormwaters, which, from time to time, overflow from existing watercourses and drainage facilities;
- (b) Floodplain areas of the City are subject to periodic inundation which may result in the loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, all of which adversely affect the public health, safety and general welfare;
- (c) The flood losses are created by the cumulative effect of obstructions in floodplains and increase of impervious areas which cause an increase in flood heights and velocities, and by the occupancy of floodplain areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood-proofed, or otherwise protected from flood damage;
- (d) Previous regulations addressing drainage requirements for new land development must be replaced by a comprehensive approach in order to prevent or minimize damage to property and to reduce the potential for loss of life;
- (e) A comprehensive approach to managing stormwater runoff and floodplain management is required to address existing and future needs;
- (f) The presently existing stormwater drainage facilities of the City require continuous operation, maintenance, renewal and replacement;
- (g) While the City does not own all drainage facilities within its jurisdiction, it does own or control a sufficiently comprehensive system in each of the major drainage basins so as to make a unified approach to flood issues a desirable and administratively achievable goal;
- (h) The Stormwater Management Program should be funded in the manner of a public utility.

Sec. 25-2. Purpose.

It is the purpose of this ordinance to improve the promotion of public health, safety and welfare by providing for, acquiring, constructing, operating, equipping, and maintaining within the City, the Stormwater Management Program and to provide a

source of funding for the system. Management of the Stormwater Management Program is intended to:

- (a) Protect human life, health, and property;
- (b) Minimize public and private storm and flood losses from stormwater runoff in the City;
- (c) Minimize expenditure of public money for costly flood control projects;
- (d) Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (e) Assure that the movement of emergency vehicles is not prohibited nor inhibited during storm or flood events;
- (f) Minimize prolonged business interruptions;
- (g) Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in floodplains;
- (h) Support a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas;
- (i) Ensure that information is available to potential buyers and developers that property may be located in a flood area;
- (j) Assure that each lot be provided with a reasonably safe building site with adequate access and that facilities be installed with protection against drainage or flood damage at the time of initial construction;
- (k) Provide a drainage system and open areas for new developments which are capable of passing the regulatory flood without flooding structures designed for residential, commercial, industrial, and other uses;
- (l) Control filling, grading, dredging and other development which may increase erosion or flood damages;
- (m) Regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands;
- (n) Preserve the quality of the City's watercourses, minimize water quality degradation, and otherwise facilitate urban water resource management techniques, including the reduction of pollution and the enhancement of the urban environment;
- (o) Protect the natural areas required to convey flood flows, and protect and preserve the water-carrying and water-retention characteristics and capacities of the floodplain used for conveying and retaining floodwaters;
- (p) Comply with the regulations of the National Flood Insurance Program as established by the Federal Insurance Administration including but not limited to the minimum criteria identified in 44 CFR Chapter 1, Parts 59 and 60.1 through 60.13;
- (q) Design and implementation of larger regional detention facilities having greater efficiency than smaller on-site detention facilities;
- (r) Assure that no new structures are constructed without compliance with this chapter;

- (s) Ensure that those who occupy the Regulatory Flood Area assume responsibility for their actions;
- (t) Maintain the Ultimate Urbanized Regulatory Floodplain, without significant change, by avoiding activities that have caused the floodplain to grow in size in other cities;
- (u) Reinforce the floodplain and stormwater guidelines from the City of Broken Arrow Comprehensive Plan;
- (v) Aid properties in which structures were built in Areas of Special Flood Hazard through human error or prior to regulatory controls being effective;
- (w) Provide a penalty for violation of established policies and regulations.

Sec. 25-3. Definitions.

Unless otherwise provided in this Chapter, the following words and phrases shall have the meanings given herein.

Adverse Effects. Increased flood elevations, increased velocity of floodwaters, and erosion are adverse effects resulting from stormwater runoff.

Appeal. A request for a review of the City of Broken Arrow's interpretation of any provision of Articles III, IV, V, VI of this ordinance, or a request for a variance.

Area of special flood hazard. The base flood area identified by the Federal Emergency Management Agency (FEMA) in the numerous flood insurance studies, including the Flood Insurance Rate Maps (FIRM). These maps were based on lands having a one (1) percent chance of being flooded in any given year as identified by FEMA.

Backwater curve. A rise in water surface elevation as a stream moves from a less constricted area to either a ponding area or more constricted area.

Broken Arrow Regulatory Floodplain Map (RFMBA). See Regulatory Floodplain Map, Broken Arrow.

Base flood area. The areas of flood hazard identified by the Federal Emergency Management Agency (FEMA) in the numerous flood insurance studies, including the Flood Insurance Rate Maps (FIRM). These maps were based on lands having a one (1) percent chance of being flooded in any given year as identified by FEMA.

Base flood elevation (BFE). The elevation for which there is a one (1) percent chance in any given year that flood levels will equal or exceed it. The BFE is determined by statistical analysis for each local area and designated on the Flood Insurance Rate Maps. It is also known as the FEMA 1% chance (100-year) flood elevation. The BFE is used to determine the Base Flood Area.

Bridge. A structure consisting of abutments, load bearing beams and/or deck, whose main function is to carry vehicular or pedestrian traffic across a depression.

Channel. A natural or artificial watercourse with a defined bed and banks to confine and convey flowing water.

Channel capacity. The maximum flow that can pass through a channel without overflowing the banks.

Channel improvements. Widening, straightening, clearing, grade alterations, paving or concrete lining, or any construction, which will increase the carrying capacity of a channel.

Compensatory flood storage. The volume of storage provided to replace any measurable loss of flood storage capacity within floodplain areas, or to eliminate the increases in velocity or flood height, which would otherwise occur as a result of construction.

Critical feature. An integral and readily identifiable part of a flood-protection system, without which the flood protection provided by the entire system would be compromised.

Culvert. A circular, rectangular, arch, elliptical or other enclosed conduit constructed of various materials whose purpose is to convey stormwater from one side of a travelway (driveway, street, trail, sidewalk) to the other side of the travelway.

Detention facility. A type of flood control system which delays the downstream progress of floodwaters in a controlled manner, generally through the combined use of a temporary storage area and a metered outlet device that causes a lengthening of the duration of flow, and thereby reduces downstream flood peaks. Detention facilities are either on-site which serve individual developments or subdivisions; or regional, which serve existing and future developments within a specified topographic region.

Development. Any human-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, or storage of equipment or materials.

Drainage basin. The total area from which surface runoff is carried away by a drainage system or channel. Other comparable terms are “drainage area”, “catchment area”, or “watershed”.

Drainage Basin Plan. The plan adopted by the City for managing surface and stormwater facilities within an individual drainage basin.

Drainage course. The natural or improved land area required for transportation of stormwater.

Earth change. Excavating, grading, regrading, landfilling, berming, or diking of land within the City of Broken Arrow. Earth change will also include the clearing or removal of more than six (6) healthy trees on a parcel, or activities commonly called clearing and grubbing within the boundaries of the Regulatory Floodplain.

Elevated building. A nonbasement building built, in the case of a building in Zones A1-30, AE, A, A99, AO, B, C, X and D, to have the top of the floor elevated above the ground level by means of foundation walls, pilings, columns (post and piers), or shear walls parallel to the level of the water and adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood. “Elevated building” also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of floodwaters.

Encroachment. Any physical object placed in a stormwater drainage system or floodplain that hinders the passage of water or otherwise affects flood flows.

Equal degree of encroachment. The delineation of floodway limits so that floodplain lands on both sides of a stream are capable of conveying a proportionate share of flood flows. This is determined by considering the hydraulic conveyance of the floodplain along both sides of a stream for a significant reach.

Equivalent Service Unit (ESU). Two thousand six hundred fifty (2,650) square feet of impervious surface.

Existing construction. Structures for which the “start of construction” commenced before the effective date of the FIRM or before January 1, 1975, for FIRMs effective before that date. “Existing construction” may also be referred to as “existing structures”.

Existing impervious area. For the purpose of calculating equivalent service units, existing impervious area is defined as areas of impervious surface that appear on the 1999 aerial topography photographs.

Expansion to an existing manufactured home park or mobile home subdivision. The preparation of additional sites by the construction of facilities servicing the lots on which the mobile homes are to be affixed (including the installation of utilities, either final site grading or pouring of concrete pads, or the construction of streets.)

Federal Emergency Management Agency (FEMA). The Federal agency responsible for administering the National Flood Insurance Program.

Flood or Flooding. A general and temporary condition of partial or complete inundation of normally dry land areas from:

- (1) The overflow of inland waters; or
- (2) The unusual and rapid accumulation of surface waters from any source.

Flood Frequency. A statistical expression of the average time period between floods equaling or exceeding a given magnitude. For example, a 100-year flood has a magnitude expected to be equaled or exceeded on the average of once every hundred years; such a flood has a one-percent chance of being equaled or exceeded in any given year. Often used interchangeably with recurrence interval.

Flood Hazard Boundary Map (FHBM). An official map of a community, approved by the Federal Insurance Administration, where the areas within the boundaries of special flood hazards have been designated as Zone A.

Flood Insurance Rate Map (FIRM). An official map of a community, on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

Flood Insurance Study. The official report provided by the Federal Insurance Administration which contains flood profiles, the water surface elevation of the base flood, as well as the flood hazard boundary-floodway map.

Floodplain. Any land area susceptible to being inundated by water from any source (see definition of Flood).

Floodplain Administrator. The designated official responsible for the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain regulations.

Floodplain management. The operation of an overall program of corrective and preventative measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations.

Flood Profile. A graph showing the relationship of water surface elevation to a specific location, the latter generally expressed as distance above the mouth of a stream of water flowing in an open channel.

Floodproofing. Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved property, water and sanitary facilities, structures and their contents.

Flood protection system. Those physical structure works, for which funds have been authorized, appropriated and expended and which have been constructed specifically to modify flooding in order to reduce the extent of the areas within a community subject to a “special flood hazard” and the extent of the depths of associated flooding. Such a system typically includes dams, reservoirs, channels, storm sewers, levees or dikes. These specialized flood-modifying works are those constructed in conformance with sound engineering standards.

Floodway. The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height (one foot or less by current FEMA requirements). NFIP communities that have an identified floodway must not allow any development in the floodway unless it can be shown that the development will not cause an increase in flood heights. See City of Broken Arrow Stormwater Criteria Manual.

Flood Zones. Zones on the Flood Insurance Rate Map (FIRM) in which the risk premium insurance rates have been established by a flood insurance study.

Functionally dependent use. A use, which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Habitable floor. Any floor usable for living purposes, which includes working, sleeping, eating, cooking or recreation or a combination thereof. A floor used for storage purposes only is not a “habitable floor.”

Highest adjacent grade. The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Hydraulics. The science that deals with practical applications of liquid or water in motion

Hydrology. The science of the behavior of water in the atmosphere, on the earth’s surface, and underground.

Impervious surface. Any hard surfaced area which prevents or retards the entry of water into the soil in the manner and to the extent that such water entered the soil under natural conditions, causing water to run off the surface in greater quantities or at an increased rate of flow than was present under natural conditions. Examples include but are not limited to rooftops, asphalt or concrete sidewalks, pavement, driveways and parking lots, walkways, patio areas, storage areas, gravel areas, and oiled macadam or other surfaces which similarly affect the natural infiltration or runoff patterns of real property in its natural state.

Levee. A human-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding.

Levee system. A flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are designed, constructed and operated in accordance with sound engineering practices.

Manufactured home. A structure, transportable in one (1) or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes, the term “manufactured home” also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than one hundred eighty (180) consecutive days. For flood insurance purposes, the term “manufactured home” does not include park trailers, travel trailers and other similar vehicles.

Manufactured home park or manufactured home subdivision (existing). A parcel (or contiguous parcels) of land divided into two (2) or more mobile home lots for rent or sale which the construction of facilities for servicing the lot on which the manufactured home is to be affixed (including, at a minimum, the installation of utilities, either final site grading or the pouring of concrete pads, and the construction of streets) is completed before the effective date of this chapter.

Manufactured home park or manufactured home subdivision (new). A parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale for which the construction of facilities for servicing the lot on which the manufactured home is to be affixed (including, at a minimum, the installation of utilities, either final or site grading or the pouring of concrete pads, and the construction of streets) is completed on or after the effective date of this chapter.

Master Drainage Plan. An officially adopted plan which, by engineering design and study, describes storm drainage system improvements which will most adequately, feasibly and economically control stormwater runoff to minimize or eliminate future danger to people and property because of floodwaters.

Mean sea level. The average height of the sea for all stages of the tide. For the purposes of floodplain management, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations are referenced.

Minimum house flood elevation. An elevation of a basement floor or lowest floor which is twenty eight (28) inches above the maximum high water elevation of the regulatory flood. If such a floor is placed on top of or above a pad in accordance with the applicable building codes, that pad must be at the regulatory flood protection elevation.

Mobile home. See the definition for manufactured home.

Natural conditions. The cover and topography of the land before any human-made changes; in areas where there have already been human-made changes before the effective date of this chapter, natural conditions shall mean the state of cover and topography of the land existing upon the effective date of this chapter. Requiring land to be maintained as “natural condition” does not forbid the removal of debris or the cutting and removal of dead or diseased trees or similar vegetation.

New Construction. For floodplain management purposes, structures for which the “start of construction” commenced on or after the effective date of this chapter, provided that construction began in violation of previous floodplain management ordinances may be treated as it newly began under the ordinance to the extent of the prior violation.

One hundred year flood. The flood elevation that has a one-percent chance of being equaled or exceeded in any given year. It is also known as the base flood or 1% chance flood.

One percent chance storm. The rainfall event that has a one-percent chance of being equaled or exceeded in any given year. It is also known as the one hundred year storm.

Overland flow. That portion of stormwater flow which is conveyed as a shallow sheet flow across land rather than concentrated in a channel or storm sewer system.

Reach. A hydraulic engineering term used to describe longitudinal segments of a channel or river.

Regulatory flood. A flood that is reasonably characteristic of what can be expected to occur on a particular stream as a result of urbanization. The Regulatory Flood has a one (1) per cent chance of occurring in any one (1) year, as determined from analysis of expected rainfalls in the general region. Runoff and water surface elevations for the regulatory flood shall be based on ultimate urbanization upstream.

Regulatory Floodplain Map, Broken Arrow (RFMBA) A/K/A Local Regulatory Floodplain Map (LRFM). Official maps of a community, on which the Regulatory Flood Area is depicted, using the Regulatory Flood Elevations. The LRFM shall represent the Regulatory Flood Area (RFA) when determined by previous engineering studies, and the Base Flood Area (BFA). In areas of no detailed engineering studies and or BFEs, the FIRM flood elevations shall be shown until more detailed studies are available.

Regulatory Flood Area (RFA). The area which is subject to inundation by the Regulatory Flood; that is, in lands having a one (1) per cent chance or greater of being flooded in any given year based upon projected, ultimate urbanized conditions. This includes areas of shallow flooding which occur where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident. This also includes human-made sumps and streets as well as areas, which, although not presently in the flood area, may be flooded in the future by increased runoff due to actual urbanization. The Regulatory Flood Area is designated on the Broken Arrow Regulatory Floodplain Map (RFMBA)

Regulatory flood elevation (RFE). The elevation for which there is a one (1) percent chance in any given year that flood levels will equal or exceed it. The RFE is determined by statistical analysis for each local area and designated on the Broken Arrow Regulatory Floodplain Map (RFMBA)

Regulatory flood fringe area. That portion of the Regulatory Flood Area between the outer boundary of the Base Flood Area and the outer boundary of the Regulatory Flood Area. The Regulatory Flood Fringe Area extends to an upstream cutoff point of approximately 40 acres of contributing watershed area.

Residential property. Any property designed and used principally for residential single-family or duplex purposes and developed according to and meeting the bulk and area requirements for residential single-family or duplex zoned property as set forth in the Broken Arrow Zoning Code at the time of development of such property.

Retention Facility. A type of flood control system (typically a reservoir) that stops the downstream progress of floodwaters by employing methods of total containment. Runoff is usually removed from storage by infiltration, evaporation, pumping, or at a release rate smaller than historic flow value.

Runoff. That portion of precipitation that is not intercepted by vegetation, absorbed by the land surface, or evaporated, and thus flows overland into the stormwater drainage system.

Start of construction. Includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, replacement or other improvement was within one hundred eighty (180) days of the permit date. The actual start means either the 1) first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or 2) the placement of a manufactured home on a foundation. Permanent construction does not include a) land preparation, such as clearing, grading and filling; nor b) excavation for basement, footings, piers or foundations or the erection of temporary forms; nor c) the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

Stormwater drainage system. Any facility, structure, improvement, development, equipment, property or interest therein, including structural and nonstructural elements, which are made, constructed, used or acquired for the purpose of collecting, containing, storing, conveying and controlling stormwater wherever; this is located including, but not limited to, storm sewers, conduits, natural and human-made channels, roadways, pipes, culverts, detention facilities and floodplains whether publicly or privately owned.

Stormwater drainage system service charge. The fee levied within the City of Broken Arrow for the use of any portion of the City's stormwater drainage system.

Stream. A body of water flowing in a surface channel. Flow may be continuous or only during wet periods. Streams that flow only during wet periods are termed "intermittent streams."

Substantial improvement. Any repair, reconstruction or improvement of a structure, the cost of which equals or exceeds fifty (50) per cent of the market value of the structure either:

- (1) Any project for improvement of a structure to comply with existing state or local health, sanitary or safety code specifications, which are solely necessary to assure safe living conditions; or
- (2) Any alteration of a structure listed on the National Register of Historic Places or a state inventory of historic places provided that the alteration will not preclude the structure's continued designation as a "historic structure."

Ten percent chance storm. The rainfall event that has a ten-percent chance of being equaled or exceeded in any given year. It is also known as the ten year storm.

Twenty percent chance storm. The rainfall event that has a twenty-percent chance of being equaled or exceeded in any given year. It is also known as the five year storm.

Two percent chance storm. The rainfall event that has a two-percent chance of being equaled or exceeded in any given year. It is also known as the fifty year storm.

Ultimate urbanization. Ultimate urbanization shall be determined by projecting future land uses throughout the entire drainage basin as defined by the City of Broken Arrow Comprehensive Plan.

Variance. A grant of relief to a person from the requirements of this chapter when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a matter otherwise prohibited by this chapter.

Violation. The failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in 44 CFR Chapter 1, Parts 59 and 60.1 through 60.13 of the National Flood Insurance Program Regulations and this chapter is presumed to be in violation until such time as that documentation is provided.

Watercourse. A natural or human-made channel that gives direction to stormwater runoff.

Water surface elevation. The height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of riverine areas.

Sec. 25-4. Local Administrator.

The Local Administrator shall be appointed by the City Manager. The Local Administrator shall exercise all lawful powers necessary and appropriate with the concurrence of the City Manager under the City of Broken Arrow's Stormwater Management Program and shall have the authority to:

- (a) Develop and administer all phases of a comprehensive program of stormwater management including planning, designing, establishing, acquiring, constructing, developing, installing, maintaining, operating, improving, repairing, replacing, and reconstructing the stormwater drainage system of the City;
- (b) Administer the record keeping and support personnel and recommend the budget necessary for the efficient operation of the Stormwater Management Program;
- (c) Enforce the regulations contained in this ordinance, including coordination with other departments and agencies;
- (d) Perform studies and analyses required to establish or modify the Stormwater Management Program;
- (e) Provide for public information and awareness that will improve management and reduce hazards to life and property;
- (f) Establish a flood alert and early warning system in cooperation with emergency response agencies;
- (g) Seek the cooperation of counties, other municipalities, and the development community within the area in minimizing the contribution of all storm drainage systems to flooding and, in particular, to cooperate with other affected political jurisdictions in preparing and implementing master drainage plans;
- (h) Act as Floodplain Administrator for the City of Broken Arrow, Oklahoma to implement the provisions of this chapter and other appropriate sections of the National Flood Insurance Program Regulations pertaining to floodplain management, and
- (i) Review, approve or deny all applications for development permits required by this ordinance.

Sec. 25-5. Stormwater Drainage Board.

There is hereby created a Stormwater Drainage Board for the purpose of providing policy guidance to the City Manager and the Local Administrator. The Board shall be comprised of the members of the Broken Arrow Municipal Authority (BAMA). The purposes and duties of the Stormwater Drainage Board shall be:

- (a) To provide an exchange of information between the public and City officers on stormwater drainage problems in the City;
- (b) To hear and consider applications for variances and appeals from decisions of the Local Administrator.

Sec. 25-6. Master drainage plans.

The Local Administrator shall develop a citywide Master Drainage Plan which will include a Drainage Basin Plan for each major drainage basin throughout the City of Broken Arrow. The objectives of the Master Drainage Plan are described as follows:

- (a) Define the hydrologic characteristics of the basins for existing development and ultimate urbanized development;
- (b) Simulate the stormwater runoff within the basin and determine the hydraulic capabilities of the existing stormwater drainage system;
- (c) Provide floodplain delineation to depict the extent of flooding along the basin's watercourses;
- (d) Develop viable flood control plans to control flooding and drainage problems within the basin;
- (e) Provide cost/benefit analysis of the proposed flood control plans to be used as a tool in determining funding and scheduling of future drainage improvements.
- (f) Identify the areas in which the City can accept a Fee-in Lieu of on site detention.
- (g) Propose areas for future regional stormwater detention facilities.

Sec. 25-7. Stormwater Management Program Audit

The Local Administrator shall submit an annual audit of the Stormwater Management Program to the Stormwater Drainage Board by the first (1st) day of November each year.

ARTICLE II. STORMWATER DRAINAGE SYSTEM SERVICE CHARGE

Sec. 25-101. Introduction and exemptions.

There is hereby established a Service Charge for the use of the City's Stormwater Drainage System at rates hereinafter established; provided, however, that the Stormwater Drainage System Service Charge shall not be imposed on the following types of property:

- (a) Government owned highways, streets, rights-of-way, parks and open space;
- (b) Privately owned residential streets and rights-of-way, other than driveways;

- (c) Oklahoma Highway Commission highway and Oklahoma Transportation Authority rights-of-way;
- (d) Railroad rights-of-way;
- (e) Undeveloped parcels of agricultural use consisting of five (5) or more acres and containing no habitable structures.

Sec. 25-102. Rate structure.

The monthly Stormwater Drainage System Service Charge for all tracts with impervious area is determined as follows:

- (a) Single family, residentially used property within the corporate limits of the City is hereby assigned one Equivalent Service Unit for each developed lot, tract, or parcel of record with the County Clerk. For purposes of this section, agricultural property, which includes a single habitable structure shall be considered residential property, and agricultural property which includes more than one habitable structure shall be assigned one Equivalent Service Unit for each structure. Provided further, in case of duplex through quad-plex developments with two (2) or more dwelling units on the same lot, tract or parcel, one Equivalent Service Unit shall be applied to each dwelling unit.
- (b) The impervious surface of all other lots, tracts, or parcels of developed real estate within the corporate limits of the City shall be measured to determine the Equivalent Service Units to be assigned to such lots, tracts or parcels. The developer shall calculate and report the proposed impervious area to the Local Administrator for each new development. The current Stormwater Drainage System Service Charge will be applied to each Equivalent Service Unit or portion thereof.
- (c) The rates established herein shall become effective on May 1, 2002, for all areas within the City on that date. For areas annexed thereafter, the rates shall become operative within thirty (30) days following annexation by the City Council.
- (d) Any property that is directly served by and under the same ownership as an approved private regional detention or retention facility may apply for an adjustment in the annual Stormwater Drainage System Service Charge. The Local Administrator may, with the concurrence of the City Manager, adjust the Stormwater Drainage System Service Charge for such properties according to the actual mitigative effect of the facility on the City's annual maintenance and operation costs, provided that:
 - (1) The owner remains responsible for all costs of non-structural maintenance of the facility;
 - (2) The facility was constructed and is maintained in compliance with City drainage standards and specifications; and
 - (3) The owner obtained the proper permits from the City.

- (4) The credit can not reduce the Stormwater Drainage System Service Charge below one Equivalent Service Unit per lot or parcel.
- (e) The Local Administrator shall have the right to inspect the detention facility at any reasonable time to determine if it is in compliance with the approved design and continues to be capable of functioning properly. If the facility's performance is affected because it fails to meet the proper operating standards, has been altered, or is in disrepair, the property owner(s) shall pay the monthly Stormwater Drainage System Service Charge at the normal rate, without benefit of reduction until such time that it is brought into total compliance. Any property served by a regional detention facility which is maintained by the City of Broken Arrow, shall be charged normal monthly Stormwater Drainage System Service Charge rates.

Sec. 25-103. Adjustment of the service charge.

If any person considers the Stormwater Drainage System Service Charges under Section 25-102 above, to be inaccurate or erroneous, the owner of the parcel may request a review of the charges by the Local Administrator within thirty (30) days of the bill or statement in question. The Local Administrator shall respond to the request within 15 days. The property owner shall have ten (10) days to challenge the Local Administrator's decision to the City Manager. All requests must be in written form, and no notice of review shall delay payment by the due date. Any adjustments found needed by the Local Administrator or the City Manager shall be accounted for on the next billing cycle.

Sec. 25-104. Collection.

A. The Service Charges herein established for use of the City's Stormwater Drainage System shall be billed to each user monthly, along with any bill for water, sanitary sewer, solid waste collection, or other utility services provided by the City, and such penalties as are now or may hereafter be established for the City's utility service bills. All collecting agencies authorized by the City to accept payment of any City utility bills are hereby directed to advise customers of the provisions of this section. In the event that any person, firm or corporation shall tender as payment of water service, sanitary sewer service, solid waste service, and/or Stormwater Drainage System Service Charge an amount insufficient to pay in full all of the charges so billed, credit shall be given first to the Service Charge for the use of the City's Stormwater Drainage System, second to the charges for collection of solid waste, third to the charge for sanitary sewer service and last to the charges for water service.

B. In the event that any utility account shall become delinquent, water services or any other City utility service may be terminated until all delinquent

charges for the use of the City's Stormwater Drainage System, solid waste service, sanitary sewer service and water service shall have been paid in full. The provisions for collection provided herein shall be cumulative to any rights or remedies, which the City may have under the laws of the State of Oklahoma.

C. In the case of users of real estate who are not billed for water, sanitary sewer or collection of solid waste by the City, the owner of the real estate or agent of the owner shall be billed monthly for the Stormwater Drainage System Service Charges herein established.

D. The City may enter into contracts with other public, quasi public, or private utility companies for the cooperative collection of any or all of the City's Service Charges.

E. All of the proceeds of this Stormwater Drainage System Service Charge are deemed to be in payment for use of, and in receipt of benefits from, the City Stormwater Management Program by the real property on, and with respect to which, the charge is imposed to the owners.

ARTICLE III. GENERAL WATERSHED DEVELOPMENT REQUIREMENTS

Sec. 25-201. Stormwater Drainage System.

- (a) All stormwater runoff shall be subject to review and approval by the City with regard to analysis, design and construction of drainage facilities. The appropriate public authority shall have the right to maintain, or cause to be maintained, the drainage system for its intended purposes. If a basin Master Drainage Plan is adopted for the area under consideration, then the provisions of the plan shall be adhered to unless amended.
- (b) The stormwater drainage system, both public and private, may consist of (1) roadways, storm sewers, detention facilities, retention facilities, improved channels; (2) unimproved drainage ways left in their natural condition; (3) the areas covered by drainage way easements for the purpose of providing overland flow; and (4) all appurtenances to the above including inlets, manholes, junction boxes, headwalls, dissipators, culverts, etc. All portions of the drainage system that exist on or in dedicated street rights-of-way or property owned by the City in fee shall be owned and maintained by the City, unless provided otherwise by agreement or covenant. Improved and natural channels on private property shall be maintained by the property owners. In this context, the removal of dead or dying trees or storm debris shall not be considered to alter the channel so as to make it no longer a natural channel.

- (c) Every development shall be provided with a stormwater drainage system designed by an Engineer registered in the State of Oklahoma, adequate to serve the development, and otherwise shall meet the approval requirements of the officials having jurisdiction.
- (d) The stormwater drainage system shall be designed so that property owners located downstream from and upstream from the development shall not be injuriously affected by the construction, operation, or maintenance of such system.
- (e) The stormwater drainage system plans prepared and sealed by a Professional Engineer shall show both plan and profile views of the proposed improvements. Any manhole or access point to the system that is buried out of sight shall be dimensioned to permanent objects in the vicinity.
- (f) The stormwater drainage system shall be designed to receive and pass the runoff from a 1% chance storm under ultimate urbanization. In areas covered by the Regulatory Flood Area, that data shall govern. In areas not covered by the Regulatory Flood Area, the design engineer shall prepare and submit a study for the area. The ultimate urbanized flow shall be confined within the said stormwater drainage system.
- (g) A minimum of the 20% chance and 1% chance storms shall be evaluated when designing the stormwater drainage systems.

Sec. 25-202. Stormwater collection system.

- (a) The stormwater collection system shall be designed either:
 - (1) To pass a minimum of the runoff from a 20% chance storm in a pipe network together with an overland flow path with capacities so that the combination of the two will pass the runoff from a 1% chance storm under ultimate urbanized conditions.
 - (2) Or, to pass the entire runoff from a 1% chance storm in the pipe network. Should the entire runoff from a 1% chance storm be conveyed in a enclosed drainage network, grading shall be designed to convey the runoff from the 1% chance storm overland in the event of inlet or storm sewer blockage or bypass.
 - (3) In either case, an overland drainage easement shall be required for overland flows. No overland flows shall be allowed to adversely affect structures.
 - (4) In areas where overland flows may cause problems, the Local Administrator may require that the entire runoff from the 1% chance storm shall be conveyed through an enclosed drainage network.
 - (5) In areas where ultimate urbanized flows are not planned for conveyance to a regional detention facility, the Local Administrator may reduce the capacity requirement to the existing condition flows.

- (b) The overland flow portion of the collection system shall be confined to dedicated rights-of-way, or drainage easements to assure the stormwater can pass through the development without inundating the lowest level of any building, dwelling, or structure. All drainage easements shall be shown on the plat.
- (c) The distance between inlets, as well as the distance to the first inlet on a street shall be determined by the lesser of the following:
 - (1) For the 1% chance storm, water depth shall not exceed the top of curb, or
 - (2) 600 feet.
- (d) At sump locations, the water depth shall not exceed six (6) inches above the top of curb, or twelve (12) inches above the top of grate, whichever is less, for the 1% chance storm. Where sump collection systems are used, an overflow route shall be provided in the event of a complete blockage of the inlet of pipe. If the inlets and pipe are sized for the 1% chance storm, a sod overflow can be used. If a 20% chance storm inlet and pipe system is designed, the overflow area shall be concrete lined. When a sod overflow structure is constructed, it shall be lined with Bermuda grass or approved equal and shall contain energy dissipators, if required at the outflow point.
- (e) Driveway approaches shall be designed and constructed so that the runoff from the 1% chance storm shall not leave the roadway except in locations where the driveway is designed as part of the drainage system.
- (f) Runoff from areas greater than one half (1/2) acre outside the roadway of arterial and collector streets shall be collected before it reaches the roadway. In no circumstance shall concentrated flows be allowed to discharge into arterial streets. Parking lots shall have internal drainage systems so as to reduce concentrated flow onto streets. This requirement shall not apply to residential lots used as single-family residences. The Local Administrator may approve sheet flows to the subject streets when connecting to an underground storm sewer system is not economical. In sheet flow instances, the developer must prove no adverse impact to the traveling public, and that the street drainage system is capable of conveying the increased flows.
- (g) Site grading shall provide surface water drainage directly into a storm sewer, natural drainage course, improved channel, or paved street without crossing more than four (4) adjacent lots.
- (h) No inlets shall be designed for placement within driveways or entries unless individually approved by the Local Administrator.

Sec. 25-203. Cross street drainage structure requirements.

- (a) Bridges; New structurally spanned bridges shall have adequate capacity to pass the 1% chance storm ultimate urbanized flows with one (1) foot of freeboard under the low chord. A backwater analysis shall be provided to

illustrate compliance with this requirement and to insure there are no adverse downstream or upstream impacts.

- (b) Culverts; New culverts under public roads shall have adequate capacity to pass the 1% chance storm ultimate urbanized flows with a maximum water surface elevation not exceeding 6 inches below the lowest pavement (or gutter) elevation in the roadway sump. A backwater analysis shall be provided to illustrate compliance with this requirement and to ensure there are no adverse downstream or upstream impacts.

Sec. 25-204. Stub street drainage requirements.

When a stub street is included in a subdivision design, it shall include provisions for drainage of the stub street until such a time as the stub street is connected to the extended street system. Design of stub streets will contain the following minimum provisions for drainage:

- (a) Stub streets which drain into the development under design will not require special drainage structures.
- (b) Stub streets which drain away from the development will require a drainage easement on the adjoining property with a 1% chance storm flow capacity ditch to a point of natural drainage or concrete curb and gutter across the end of the street, with storm inlets tied to an operational storm sewer system.

Sec. 25-205. General storage requirements.

- (a) Detention storage shall be required to accommodate excess runoff from all storms from the 20% chance storm up to the 1% chance storm. Excess runoff is that runoff generated due to urbanization which is greater than the runoff historically generated under existing conditions, for a given frequency storm. Detention facilities shall be designed so that the peak rate of discharge does not exceed that of the existing conditions.
- (b) Peak release rates from private developments shall not exceed the existing runoff that occurred before development for all storm frequencies up to and including the 1% chance storm. The 20% chance, 10% chance, 2% chance, and 1% chance storms shall be investigated at a minimum.
- (c) Public regional detention facilities may be designed with 1% chance storm outflow rates equal to or lower than pre-development values with possible increased flow rates for the 20% chance, 10% chance, and 2% chance storms from pre-development flow rates under those conditions where downstream areas are not adversely impacted.
- (d) If the development is situated in such a manner that the stormwater is discharged into a stormwater system which the Local Administrator determines will not be adversely affected, the developer may make a monetary payment or some other form of valuable consideration to the

City in accordance with Section 25-207 of this ordinance, in lieu of constructing an onsite detention facility.

- (e) Changes may be made to streams or channels within the regulatory flood fringe area; subject to approval of the Local Administrator, provided that:
 - (1) The volume of floodwater storage is not reduced;
 - (2) Neither downstream or upstream water surface elevations are adversely increased; and
 - (3) All required permits are obtained prior to starting work

Sec. 25-206. Acceptable types of storage.

Acceptable types of detention or retention facilities:

- (a) Dry detention facilities: Such facilities must be provided with underground drainage or a concrete trickle channel to eliminate standing water after storm periods. This type of facility may be used for recreational purposes and other approved uses to the maximum extent possible when not functioning as a detention facility.
- (b) Wet detention facilities: Such facilities will be used on a limited basis and will be approved only when the pond inflow is sufficient to maintain pond water surface levels and to preclude the water from stagnating.
- (c) Underground detention facilities: This type of facility may consist of basins, tanks, and or oversized storm sewers.
- (d) Parking lot detention: This type of facility may be used provided the maximum 1% chance storm ponding depth is twelve (12) inches or less. Any repaving of the parking lot shall be evaluated for impact on volume and release rates and are subject to approval by the Local Administrator. All parking lot detention areas shall have a minimum of two signs posted identifying the detention pond area. The signs shall have a minimum of 1.5 square feet and contain the following message:

“WARNING”

“This area is a stormwater detention facility and is subject to periodic flooding to a depth of *(provide 1% chance storm design depth)*.

Any suitable materials and geometry of the sign is permissible, subject to approval by the Local Administrator.

- (e) Retention facilities: Such facilities may be used when the existing conditions runoff from a watershed would exceed the capacities of downstream facilities. The retention facility shall contain the 1% chance stormwater runoff and release shall be by evaporation, infiltration or slow release at outflow rates less than existing levels.

Sec. 25-207. Fee-in-lieu of detention.

When approved by the Local Administrator, a developer may make a monetary payment or some other form of valuable consideration in lieu of building a detention facility. The Local Administrator shall make the determination of whether fee-in-lieu of detention will be allowed based upon capacity of the receiving stormwater drainage system and whether regional detention facilities are either proposed or in place. The amount of the fee shall be based on the number of square feet of impervious area added to the property. The developer shall provide the Local Administrator calculations of the number of square feet of increased impervious area and the Local Administrator shall prepare a bill for payment in-lieu of detention. The fee shall be paid at the time the final plat is released for residential developments. The fee shall be paid prior to issuance of building permit for non-residential developments. When these fees are collected, they shall be deposited into a Stormwater Capital Improvements Fund, which will be used for future or ongoing stormwater improvement and regional detention projects.

Sec. 25-208. Stormwater Development Permit.

A Stormwater Development Permit shall be obtained prior to any development on projects which require platting, site plan approval or alterations to existing public stormwater drainage systems. The minimum submittal requirements shall be as defined in the Broken Arrow Stormwater Criteria Manual.

The Local Administrator shall have the right to waive sections of the permit requirements, subject to the developer providing adequate proof, to the Local Administrator, the development does not cause adverse impacts to the community.

ARTICLE IV. FLOODPLAIN DEVELOPMENT REQUIREMENTS

Sec. 25-301. Statutory authorization.

The legislature of the State of Oklahoma has in Title 82 Section 1601-1619 delegated the responsibility to local government units to adopt regulations designed to minimize flood losses. The following is an exercise of such authority.

Sec. 25-302. Methods of reducing flood losses.

In order to accomplish its purposes, this ordinance uses the following methods:

- (a) Restrict or prohibit uses that are dangerous to health, safety or property in times of flood, or cause measurable increases of flood heights or velocities, or which result in damaging increases in erosion or produce a net decrease in storage of stormwater in floodplain areas.
- (b) Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.
- (c) Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters.
- (d) Control excavation, grading, re-grading, paving, filling, dredging, berming, diking and other development which may increase flood damage.
- (e) Prevent or regulate the construction of flood barriers which will increase flood hazards to other properties or people.
- (f) Regulate the connection to and use of the stormwater drainage system.
- (g) Provide a means for maintenance of the stormwater drainage system.

Sec. 25-303. General provisions.

- (a) This ordinance shall apply to all land within the jurisdiction of the City of Broken Arrow, Oklahoma.

- (b) No structure or land shall hereafter be located, altered, or have its use changed without full compliance with the terms of this ordinance and other applicable regulations.
- (c) It is not intended by this ordinance to repeal, abrogate, or impair any existing easements, covenants or deed restrictions. However, where this ordinance imposes greater restrictions, the provisions of this ordinance shall prevail. All other ordinances inconsistent with this ordinance are hereby repealed to the extent of their inconsistency only.
- (d) In the interpretation and application, the provisions of this ordinance shall be considered as minimum requirements as determined by the City of Broken Arrow and deemed neither to limit nor repeal any other powers granted under state statutes.
- (e) If any section, clause, provision or portion of this ordinance is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this ordinance shall not be affected thereby.
- (f) All requirements of this ordinance meet or exceed the minimum State and Federal floodplain regulations including the minimum criteria identified in 44 CFR Chapter 1, Parts 59 and 60.1 through 60.13.
- (g) All plans submitted by any person proposing development shall be signed and sealed by a Registered Professional Engineer, registered in the State of Oklahoma.

Sec. 25-304. Basis for establishing the Regulatory Flood Area.

- (a) The lands covered by the Regulatory Flood Area are identified on a composite map or maps, known as the Regulatory Floodplain Map of Broken Arrow (RFMBA), prepared by the Local Administrator. The RFMBA utilizes the best available information for flood areas in each drainage basin. The RFMBA identifies both the Base Flood Area and Regulatory Flood Fringe Area. The Regulatory Flood Area will be identified as the following:
 - (1) Those areas identified by the Federal Emergency Management Agency in the most current version of a scientific and engineering report entitled, "Flood Insurance Study" The Flood Insurance Study contains the flood profiles, floodway data tables, and Flood Insurance Rate Maps for areas within both Tulsa and Wagoner Counties. This document is adopted by FEMA and is also known as the Flood Insurance Rate Maps (FIRM).

- (2) The areas identified by the City of Broken Arrow as the Regulatory Ultimate Urbanized Floodplain in a scientific and engineering "Master Drainage Plan" with accompanying maps and any revisions thereto. The above documents are hereby adopted and declared to be part of this ordinance and are on file at the City Engineer's office.
- (3) The most restrictive floodplain will be used in identifying the Regulatory Flood Area.
- (4) The Regulatory Flood Area, at locations where the point in question has a drainage area of over one (1) square mile up stream, may be divided into the Base Flood Area and the Regulatory Flood Fringe Area. The Regulatory Flood Fringe Area shall extend up to an approximate 40 acre contributing watershed cutoff point. The Regulatory Flood Area shall be reserved for flood tolerant uses. See Section 25-317 for flood tolerant uses. Encroachments may be permitted in the Regulatory Flood Fringe Area, provided a Floodplain Development Permit is obtained in accordance with Section 25-307.
- (5) Any property owner or developer seeking a Floodplain Development Permit in accordance with Section 25-307 in areas where the Regulatory Flood Area has not been established by governmental entity or is in FEMA Zone A, shall provide regulatory flood elevations and associated engineering data calculated by a Licensed Professional Engineer as required by the Local Administrator.
- (6) All studies performed under the direction of an owner or developer shall make use of the best available data, and shall specifically include: (a) a determination of all elevations from a U.S.G.S. benchmark outside of the flood hazard area; (b) a determination of the elevation of historic flooding, if such a historic flooding is in excess of the regulatory flood area.

Sec. 25-305. Use of other flood data.

When regulatory flood elevation data are not available, the Local Administrator may use flood information from any other authoritative source, such as historical data or studies from other private or governmental sources, to establish flood elevations within the Regulatory Flood Area, for the purposes of this ordinance.

Sec. 25-306. Compliance.

No structure, substantial improvement, development, or land shall hereafter be located, altered, or have its use changed within the Regulatory Flood Area without full compliance with the terms of this ordinance and all other City of Broken Arrow ordinances, codes, and regulations.

Sec. 25-307. Floodplain Development Permit.

A Floodplain Development Permit shall be required to assure conformity with the provisions of this chapter and to insure that new development is constructed in a manner that minimizes exposure to flooding. A Floodplain Development Permit shall be obtained before construction or development begins in any area in the Regulatory Flood Area established in section 25-304. Application for a Floodplain Development Permit shall be made on forms furnished by the Local Administrator.

Sec. 25-308. Floodplain Development Permit application requirements.

The applicant shall provide at least the following information: in areas of historic problems or where atypical conditions exist, additional information may be required on the permit application form.

- (a) All Floodplain Development Permit applications may include, but not be limited to, plans in triplicate drawn to scale showing the nature, location, dimensions and elevations of the area in question; and the nature, location, dimensions and elevations of existing or proposed development, structures, fill, storage of materials, and drainage facilities. The Local Administrator may require hydrologic and hydraulic studies as required. The applicant is responsible for any other permits required to fulfill local, State, and Federal regulatory requirements and;
- (b) Elevation in relation to mean sea level of the lowest point on the top of a pad, and the lowest point on the top of the floor surface of the lowest floor or basement, whichever is applicable, of all proposed structures. Upon completion of the structure, the permit holder shall submit to the Local Administrator the as-built elevation, certified by a Licensed Professional Engineer or Registered Land Surveyor;
- (c) Elevation in relation to mean sea level to which any nonresidential structure shall be floodproofed. Upon completion of the floodproofed portion of the structure, the permit holder shall submit to the Local Administrator the as-built floodproofed elevation certified by a Licensed Professional Engineer or Surveyor;
- (d) A certificate from a Licensed Professional Engineer or Architect that the nonresidential floodproofed structure will meet the floodproofing criteria of section 25-310 and 25-312;
- (e) A certificate from a Licensed Professional Engineer or Architect that any utility floodproofing will meet the criteria of section 25-315;
- (f) All requirements of Broken Arrow Earth Change Ordinances shall be met to obtain a Floodplain Development Permit.
- (g) Modification to the Regulatory Flood Area can not increase velocities or volumes of water to the extent that significant erosion of floodplain soils would occur either on the subject property, or on some other property upstream or downstream; or does not provide compensatory storage for

any measurable loss of flood storage capacity within the applicable system as compared to natural conditions. Computations by a Licensed Professional Engineer must be submitted that verify compliance with these requirements.

- (h) A description of the extent to which any watercourse will be altered or relocated as a result of proposed development. Computations by a Licensed Professional Engineer must be submitted that demonstrate that the altered or relocated segment will provide equal or greater conveyance than the original channel segment, and address floodplain storage as required by the Local Administrator. The applicant must submit any maps, computations, or any other materials required by the Federal Emergency Management Agency (FEMA) to revise the documents enumerated in section 25-307, when notified by the Local Administrator, and must pay any fees or other costs assessed by FEMA for this purpose. The applicant must also provide assurances that the conveyance capacity of the altered or relocated channel segment will be maintained.
- (i) In FEMA Zone A, when neither base flood elevation nor regulatory flood elevation data are available, the applicant shall provide regulatory flood elevation and floodplain delineation calculated by a Registered Professional Engineer for the proposed development
- (j) A technical analysis, by a Licensed Professional Engineer, which shows whether proposed development to be located in the Regulatory Flood Area may result in physical damage.
- (k) The Local Administrator shall have the right to waive sections of the permit requirements, subject to the developer providing adequate proof, to the Local Administrator, the development does not cause adverse impacts to the community.

Sec. 25-309. Floodplain Development Permit application review.

The Local Administrator shall conduct the following permit application review before issuing a Floodplain Development Permit. Approval or denial of a permit shall be based on all the provisions of this ordinance and should also consider the following guidelines:

- (a) The completeness of the application, particularly with the requirements of Section 25-308, and for compliance with the provisions and standards of this ordinance;
- (b) The susceptibility of the proposed development and its contents to flood damage and the effect of such damage on the individual owner shall be reviewed. If a proposed structure is located in the Regulatory Flood Area, all new construction and substantial improvements shall meet the applicable construction standards;
- (c) Determination of whether any proposed development in the Regulatory Flood Area may result in physical damage to any other

property. The Local Administrator may require the applicant to submit additional technical analyses and data necessary to complete the determination. If the proposed development may result in physical damage to any other property, no permit shall be issued. The applicant may revise the application to include measures to mitigate or eliminate the adverse effects and re-submit the application;

- (d) The danger to life due to flooding or erosion damage;
- (e) The danger that materials may be swept onto other lands to the injury of others;
- (f) The safety of access to the property in times of flooding for ordinary and emergency vehicles;
- (g) The increased costs of providing governmental services during and after flood conditions, including maintenance and repair of streets and bridges, and public utilities and facilities such as sanitary sewer, gas, electrical, communications and water systems;
- (h) The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site;
- (i) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;
- (j) The relationship of the proposed use to the City of Broken Arrow Comprehensive Plan for that area;
- (k) A determination that all necessary permits have been received from those governmental agencies from which approval is required by State or Federal Law.

Sec. 25-310. General construction standards.

The following standards apply to new development, including new and substantially improved structures, adjacent to the Regulatory Flood Area as designated in Section 25-304.

- (a) No new habitable structures shall be constructed or placed within the Regulatory Floodplain.
- (b) No habitable structures within the Regulatory Floodplain will be substantially improved.
- (c) All structures shall be constructed with materials and utility equipment resistant to flood damage.
- (d) All structures shall be constructed using methods and practices that minimize flood damage.
- (e) Monetary value of floodproofing shall not be considered in calculations of substantial improvement for purposes of this ordinance.
- (f) New construction and substantial improvements, with fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding, designed to automatically equalize hydrostatic flood

forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a Licensed Professional Engineer or Architect or meet or exceed the following minimum criteria:

- (1) A minimum of two (2) openings, having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding, shall be provided.
 - (2) The bottoms of all openings shall be no higher than one (1) foot above the lowest adjacent finished grade.
 - (3) Openings may be equipped with screens, louvers, valves, or other coverings or devices, provided they permit the automatic entry and exit of floodwaters.
- (g) All structures within the Regulatory Floodplain shall be anchored to prevent flotation, collapse or lateral movement.

Sec. 25-311. Residential construction.

Adjacent to all Regulatory Flood Areas, the following provisions are required:

- (a) New construction or substantial improvement of any residential structure which lacks a basement shall have the lowest floor placed on or above a pad in conformity with the building code, which pad is elevated to the Regulatory Flood Protection Elevation; the construction of such a floor in accordance with the building code above the pad here required shall have the lowest point on the floor surface placed twenty-eight (28) inches above the elevation of the Regulatory Flood.
- (b) New construction or substantial improvement of any residential structure having a basement shall have the lowest point on the floor surface of the basement placed twenty-eight (28) inches above the elevation of the Regulatory Flood.
- (c) A Licensed Professional Engineer, Architect, or Land Surveyor, shall submit a certification to the Local Administrator that the standard of this chapter is satisfied. As-built grading and drainage plans shall be furnished by the Engineer.

Sec. 25-312. Non-residential construction.

Adjacent to all Regulatory Flood Areas, the following provisions are required:

- (a) New construction or substantial improvement of any commercial, industrial or other non-residential structure shall either (1) have the lowest floor, including basement, elevated to Regulatory Flood Protection Elevation (Regulatory Flood Elevation plus one foot) or, (2) together with attendant utility and sanitary facilities, be flood proofed so that below the Regulatory Flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components

having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.

- (b) A Licensed Professional Engineer or Architect shall submit a certification to the Local Administrator that the standards of this subsection are satisfied including the specific elevation (in relation to mean sea level) to which the structure is to be floodproofed.

Sec. 25-313. Subdivisions and development.

The following standards apply to all new subdivision proposals adjacent to all Regulatory Flood Areas:

- (a) All subdivision proposals shall be consistent with sections 25-310 and 25-311 of this ordinance.
- (b) Regulatory Flood elevation data shall be provided with the subdivision proposal if not otherwise provided pursuant to section 25-304 of this ordinance.
- (c) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards.
- (d) All subdivisions shall have public utilities and facilities such as sewer, gas, electrical, cable, and water systems located and constructed to minimize flood damage.
- (e) Adequate overflow and access routes to floodplains will be provided in subdivision layouts. Paving of overflow and access routes may be required by the Local Administrator.
- (f) The final plat of any development requiring a FEMA LOMR will not be accepted until such LOMR is approved in writing by FEMA. Building permits will not be issued on any lots in developments awaiting LOMR approval.
- (g) All subdivisions will meet the stormwater and detention requirements of the City.

Sec. 25-314. Manufactured homes

In all Regulatory Flood Areas no manufactured homes shall be placed in the Regulatory Flood Area. All existing manufactured homes shall be anchored to resist flotation, collapse, or lateral movement, per the City Building Code.

Sec. 25-315. Utilities.

In all Regulatory Flood Areas, the following provisions are required:

- (a) Machinery and equipment servicing a building must either be elevated to or above the Regulatory Flood Elevation, or designed to prevent water

from entering or accumulating within the components during a flood. This includes heating, ventilating, and air conditioning equipment, hot water heaters, appliances, elevator lift machinery, and electrical junction and circuit breaker boxes. When located below the Regulatory Flood Elevation, a Licensed Professional Engineer's or Architect's certification of the design is required;

- (b) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;
- (c) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharges from the system into floodwaters. Sanitary sewer and storm drainage systems for buildings that have openings below the Regulatory Flood Elevation shall be provided with automatic backflow valves or other automatic backflow devices that are installed in each discharge line passing through a building's exterior wall; and,
- (d) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.
- (e) Any utilities and or equipment within the floodplain must be anchored down.

Sec. 25-316. FEMA Elevation Certificate.

When any portion of a lot or parcel of land contains an area of special flood hazard, the owner of the property and/or the general contractor shall provide to the City Inspector a completed Federal Emergency Management Agency Elevation Certificate on all buildings constructed at the time of the finished floor inspection described in Broken Arrow Code, Section 6-19. Delivery of the certificate to the Local Administrator shall be a warranty by the property owner and by the general contractor that the information contained within the certificate is accurate. City employees may use the information contained within the certificate unless they have affirmative knowledge that this information is inaccurate. The certificate shall be a public document. Any building which is remodeled to a point in excess of twenty-five (25) percent of the fair market value shall be considered new construction for purposes of compliance in the supplying of FEMA elevation certificates.

Sec. 25-317. Flood tolerant land uses.

Regulatory flood areas may be utilized for, but not limited to, the following uses:

- (a) Recreational parks.
- (b) Linear parks or tree belt.
- (c) School playground
- (d) Common area or open space.
- (e) Golf course or driving range.
- (f) Nature areas.
- (g) Back yards.

- (h) Parking lots.
- (i) Agricultural uses.
- (j) Landscape nursery or nursery stock production.
- (k) Regional detention facilities.

Sec. 25-318. Area of special flood hazard notice for tenants.

a. Every owner of real property, any part of which is located in an area of special flood hazard as depicted and shown on a Flood Insurance Rate Map adopted by the City, is hereby required to notify in writing every tenant of the real property of the location of the property in an area of special flood hazard and to obtain and keep for inspection upon request by the Local Administrator or his authorized representative written acknowledgement of the receipt of the notice signed by each of the tenants.

b. The notice shall be given and the acknowledgement thereof obtained prior to any of the tenants taking possession of or occupying the real property or, in the case of property already rented or leased prior to the effective date of this provision, within sixty (60) days after its adoption and publication. The notice and acknowledgement shall be in a separate document and not contained within any other document, such as a lease.

Sec. 25-319. Warning and disclaimer of liability.

The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on engineering and scientific methods of study and computations. However, larger floods may occur. Flood depths may be increased by human-made or natural causes, such as brush obstructed channels and bridge openings restricted by debris. This chapter does not imply that areas outside the projected Regulatory Flood or land uses permitted within such areas will be free from flooding or flood damages. This ordinance and any amendment thereto shall not create liability on the part of the City of Broken Arrow, Oklahoma or any of its trusts or any officer or employee thereof for any flood damages that result from reliance on this chapter or any administrative decision lawfully made there under. Private developers, builders and contractors remain responsible for any errors or omissions as to work performed in an attempt to comply with this ordinance, and the City is not liable because one or more inspections or reviews did not detect the problems of the private entities, even if the City undertakes portions of the maintenance of the problem facilities.

ARTICLE V. ENVIRONMENTAL IMPACTS

Sec. 25-401. Introduction.

The requirements of this chapter shall not supercede any applicable local, State, or Federal environmental requirements, including those involving wetlands, riparian habitat, water quality, or endangered species.

Sec. 25-402. Erosion control

Erosion control shall be provided during the construction phase on all construction sites as necessary to prevent impacts to offsite areas and/or public rights-of-way. The primary goal of erosion control and best management practices is to minimize erosion and sedimentation during construction activities until final grading, landscaping and storm sewer structures are in place. Best management practices include but are not limited to seeding, sodding, sprigging, silt fences, straw bale dikes, earth dikes or swales, temporary stream crossings, storm sewer inlet protection, temporary sediment basins, and stabilized construction entrances. Failure to provide sediment and erosion control protection can result in suspension of the earth change, stormwater development, and building permits. A violation of this Section 25-402 by the failure to comply with any of its requirements shall constitute a Class D offense, and any person or entity convicted thereof shall be punishable as set forth in Broken Arrow Code. Provided, that each lot upon which such violation occurs shall constitute a separate offense; and each day on which a violation occurs or is allowed to remain shall constitute a separate offense. The imposition of criminal sections shall not prevent Broken Arrow from taking any lawful action as is necessary to prevent or remedy a violation.

Sec. 25-403. NPDES Phase II requirements

The requirements of this ordinance are not meant to cover all environmental regulations necessary for Broken Arrow's NPDES Phase II permit.

ARTICLE VI. FLOODPLAIN DEVELOPMENT ADMINISTRATION

Sec. 25-501. Floodplain Appeals Board.

There is hereby created a Floodplain Appeals Board for the purpose of providing policy guidance to the City Manager and the Local Administrator. The Board shall be comprised of the members of the Broken Arrow Municipal Authority (BAMA). The purposes and duties of the Floodplain Appeals Board shall be:

- (a) To provide an exchange of information between the public and City officers on flooding problems in the City;
- (b) To hear and rule upon applications for variances and appeals from decisions of the Local Administrator as provided herein.

Sec. 25-502. Amendments.

This ordinance may be amended only after a public hearing at which the citizens have an opportunity to be heard. The Local Administrator or any affected person may petition for an amendment to this ordinance, and shall initiate such proceeding by filing with the Floodplain Appeals Board a proper and complete petition for such change on the form or forms provided by the Floodplain Appeals Board.

Upon receipt of such petition the Local Administrator with the assistance, advice and counsel of the Engineering and other applicable City departments, shall make a study and report the findings to the Floodplain Appeals Board. The report shall be made available to the applicant and other interested parties at least thirty (30) days before the date of any public hearing for the respective petition.

Upon the receipt of the Local Administrator's report and recommendation, the Floodplain Appeals Board shall hold a public hearing thereon at which the petitioner and other interested parties have an opportunity to be heard. Public notice of the time and place of the hearing shall be posted. Said public hearing may be incorporated into the regular agenda of the BAMA. Any amendment recommended by the Floodplain Appeals Board shall be submitted to the City of Broken Arrow Council for consideration under Council policies.

Sec. 25-503. Appeals.

Any property owner appealing any written decision concerning the interpretation or administration of Articles III, IV, V, and VI of this chapter shall first appeal in writing to the Local Administrator, who shall make a written response within fifteen (15) working days of receipt of the appeal. Within the fifteen day period, the Local Administrator may hold hearings and request such additional information as deemed necessary in order to render a written decision. Any property owner that alleges there is an error in any requirement, decision, or determination made by the Local Administrator in the enforcement or administration of this ordinance may file with the City Manager a written appeal for review by the Floodplain Appeals Board.

Sec. 25-504. Public hearing procedures.

The Floodplain Appeals Board shall hold a public hearing concerning the appeal within forty-five (45) days after the written appeal is received by the City Manager, unless the record reveals non-compliance by the applicant with the requirements of Section 25-503. The appeal shall contain a detailed explanation of all matters in dispute, and the Floodplain Appeals Board, through the Local Administrator, may require the submission of such additional information, as it deems necessary. The matter may be continued to one or more dates certain to allow such addition of information to be submitted. The public hearing may be incorporated into the regular BAMA meeting.

The Floodplain Appeals Board shall render its decision within thirty days of the close of the hearing.

Sec. 25-505. Variance procedures.

(a) A property owner requesting a variance from the requirements of this ordinance shall submit in writing to the Local Administrator a written variance request which shall be heard by the Floodplain Appeals Board.

The Floodplain Appeals Board shall hold a public hearing concerning the variance request within forty-five (45) days after the written request is received and any additional information requested. Said public hearing may be incorporated into the regular BAMA meeting. The variance request shall contain a detailed explanation of all conditions of the request, and the Floodplain Appeals Board, through the Local Administrator, may require the submission of such additional information, as it deems necessary.

(b) The Floodplain Appeals Board shall consider all technical evaluations, relevant factors, and standards specified in other sections of this ordinance and also evaluate:

- (1) The danger that materials may be swept onto other lands to the injury of others;
- (2) The danger to life and property due to flooding or erosion damage;
- (3) The susceptibility of the proposed facility and its contents to flood damage and the effect of the individual owner;
- (4) The importance of the services provided by the proposed facility to the community;
- (5) The necessity to the facility of a waterfront location, where applicable;
- (6) The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
- (7) The compatibility of the proposed use with existing and anticipated development;
- (8) The relationship of the proposed use to the City's Comprehensive Plan, Master Drainage Plan, and floodplain management program of that area;
- (9) The safety of access to the property in times of flood for ordinary and emergency vehicles;
- (10) The costs to local governments and the dangers associated with conducting search and rescue operations during periods of flooding;
- (11) The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site; and

- (12) The costs of providing governmental services during and after flood conditions, including search and rescue operations, maintenance and repair of public utilities and facilities such as sanitary sewer, gas, electrical, communications, water systems and streets and bridges.
- (c) Upon consideration of all applicable factors of Section 25-505b. (1 through 12) and the purposes of this chapter, the Floodplain Appeals Board may attach such conditions to the granting of variances, as it deems necessary to preserve the purposes of this ordinance. The Floodplain Appeals Board shall render its decision within thirty days of the close of the hearing.
- (d) Any applicant to whom a variance is granted for a building with the lowest floor below the regulatory flood elevation shall be given written notice over the signature of a community official advising that the cost of flood insurance will be commensurate with the increased risk resulting from the lowest floor elevation.
- (e) The Local Administrator shall maintain the records of all variance requests including technical information, forms, reports etc. for a period of not less than 10 years and report any variances to the Federal Emergency Management Agency upon request.

Sec. 25-506. Conditions for variances.

Conditions for variances to this ordinance are as follows:

- (a) Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items in Section 25-505b. (1 through 12) have been fully considered. As the lot size increases beyond one-half acre, the technical justification required for issuing the variance increases.
- (b) Variances may be issued for the repair or rehabilitation of historic structures upon determination that:
 - (1) the proposed repair or rehabilitation will not preclude the structure's continued designation as a "Historic Structure";
 - (2) the variance is the minimum necessary to preserve the historic character and design of the structure.
- (c) Variances may be issued by a community for new construction and substantial improvements and for further development necessary for the conduct of a functionally dependant use provided that:
 - (1) the criteria of Section 25-506 (a, d, e, and f) are met; and
 - (2) the structure or other development is protected by methods that minimize flood damages during the regulatory flood and create no additional threat to public safety.
- (d) Variances shall not be issued within any designated floodway if any increase in flood levels during the regulatory flood discharge would result.

- (e) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- (f) Variances shall only be issued upon receiving written justification to establish that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing Broken Arrow ordinances or regulations.

Sec. 25-507. Inspections

The Local Administrator and/or the developer's engineer shall make periodic inspections at appropriate times throughout the period of construction in order to monitor compliance with permit conditions and enable said inspector to certify, if requested, that the development is in compliance with the requirements of the Floodplain Development Permit and/or any variance provisions.

Sec. 25-508. Stop work order.

Upon the suspension or revocation of a Floodplain Development Permit by the Local Administrator, the Local Administrator shall issue a stop work order on all construction activity on the subject property, which may be directly or indirectly related to site drainage and which is being performed pursuant to any permits, licenses, franchises or contracts issued or approved by the City. Such stop work order may order a work stoppage on all construction activity on buildings or structures and appurtenances thereto, including building, electrical, plumbing, mechanical and street work, storm sewers, sanitary sewers, gas lines, and all utilities including gas, electric, telephone and cable television.

Sec. 25-509. Certificate of Compliance.

- (a) In the Regulatory Flood Area, as determined by documents enumerated in Section 25-304, it shall be unlawful to occupy or to permit the use or occupancy of any building or premises, or both, or part thereof hereafter created, erected, changed, converted or wholly or partly altered or enlarged in its use or structure until a Certificate of Compliance has been issued by the Local Administrator stating that the building or land conforms to the requirements of this ordinance.
- (b) A Certificate of Compliance shall be issued by the Local Administrator upon satisfactory completion of all development in the Regulatory Flood Area.
- (c) Issuance of the certificate shall be based upon the inspections conducted as prescribed in Section 25-507, and/or any certified elevations, hydraulic data, floodproofing, anchoring requirements or encroachment analysis which may have been required as a condition of the approved permit.

Sec. 25-510. Information to be retained.

The Local Administrator shall retain and make available for inspection, copies of the following:

- (a) Floodplain Development Permits and Certificates of Compliance; and
- (b) Variances issued pursuant to Section 25-505, variance procedures.
- (c) Elevation Certificates.

Sec. 25-511. Violations/penalties.

Any property owner, builder, or developer, who fails to comply with any requirements of this chapter (including violation of conditions and safeguards established in connection with variances) shall be guilty of a Class D offense, unless a different penalty is specified herein. Provided, that each lot upon which such a violation occurs shall constitute a separate offense; and each day on which violation occurs or continues shall constitute a separate offense. The imposition of criminal sections shall not prevent Broken Arrow from taking any lawful action as is necessary to prevent, abate or remedy a violation; including any civil action or special proceeding.

ARTICLE VII. STORMWATER AND FLOODPLAIN FEE SCHEDULES

Sec. 25-601. Stormwater Drainage System Service Charge.

The monthly stormwater drainage system service charge is hereby established at Three Dollars (\$3.00) for each Equivalent Service Unit assigned to a lot, tract, or parcel of real estate as detailed in Section 25-102.

Sec. 25-602. Fee-In-Lieu of Detention Rate.

The fee-in-lieu of detention rate is hereby established at twenty cents (\$0.20) per square foot of increased impervious area added to the property as detailed in Section 25-207.

Sec. 25-603. Stormwater Development Permit Fee.

The Stormwater Development Permit Fee is hereby established at Twenty Five Dollars (\$25.00) for each Stormwater Development Permit application.

Sec. 25-604. Floodplain Development Permit Fee.

The Floodplain Development Permit Fee is hereby established at Twenty Five Dollars (\$25.00) for each Floodplain Development Permit application.

SECTION II. The invalidity of any provision, clause or portion of this Chapter or the invalidity of the application thereof to any person or circumstance shall not affect the remainder of this Chapter or the validity of its application to other persons or circumstances.

SECTION III. Any ordinance or parts of ordinances found to be in conflict herewith are hereby repealed.

SECTION IV. An emergency exists for the preservation of the public health, peace and safety, and therefore this ordinance shall become effective from and after the time of its passage and approval.

PASSED AND APPROVED and the emergency clause ruled upon separately this ____ day of _____, 2002.

DATED this ____ day of _____, 2002.

MAYOR

ATTEST:

(SEAL) CITY CLERK

APPROVED:

CITY ATTORNEY